PRACTICE MANAGEMENT

http://dx.doi.org/10.15331/jdsm.7322

# What is the AHRQ Report and Why Should Dentists Care?

Aaron Glick, DDS, D.ABDSM[1] and Jessica Glick, DO[2]

[1] *University of Texas Health Science Center at Houston School of Dentistry, Houston, TX;* [2] *Memorial Hermann Hospital System, The Woodlands, TX*

The Agency for Healthcare Research and Quality (AHRQ) report has the ability to impact the sleep field through its interpretation of the scientific literature in the context of how insurance payers reimburse patient treatment options. Sleep healthcare providers, like most healthcare specialties, rely heavily on third-party payment for patients to be accepting and compliant with treatment recommendations. For this reason, knowledge regarding the AHRQ report's analysis process and scope of study can elucidate how it can influence insurance reimbursement and understanding of the overall sleep field for dentists.

**Keywords:** AHRQ; CMS; dental sleep medicine; medical insurance; CPAP; mandibular advancement device

**Citation:** Glick A, Glick J. What is the AHRQ report and why should dentists care?. *J Dent Sleep Med*. 2023;10(4)

## INTRODUCTION

The Agency for Healthcare Research and Quality (AHRQ) works within the United States Department of Health and Human Services to review available evidence that improves US healthcare quality, equity, and affordability. The Centers for Medicare & Medicaid Services (CMS) requested that the AHRQ produce a report regarding the long-term effects of continuous positive airway pressure (CPAP) treatment. CMS is a federal agency within the Department of Health and Human Services that offers healthcare coverage to over 100 million individuals in the United States. It is likely that CMS has been particularly interested in coverage of CPAP effectiveness because of the SAVE trials,[1] a large prospective study that showed limited to no health benefits for long-term use of CPAP. With approximately 5 million patients in the US being prescribed CPAPs,[2] the CMS has a vested interest in how taxpayer dollars are being allocated toward paying for this gold-standard sleep apnea treatment. CMS also tracks health outcomes and payment measures across eight metrics, including acute myocardial infarction, heart failure, and stroke.[3] As value-based care is increasingly becoming an insurance payer priority, the CMS is increasingly focused on patient-centered outcomes. For instance, why pay for an x-ray if this does not change the outcome of treatment or recovery for a patient?

## DISCUSSION

### Results

The AHRQ report reviewed 52 studies using stringent screening criteria. Specific clinical questions, such as CPAP effectiveness and validity of screening/diagnostic indices, were investigated using an analytical framework to select and assess the current literature. Ultimately, the AHRQ report did not find evidence to support that CPAP therapy improved long-term cardiovascular outcomes, all-cause mortality, incidence of hypertension, or resolution of hypertension. These findings further supported the initial SAVE trial's conclusion that long-term CPAP use is not beneficial to patient health outcomes.

While the final AHRQ report results are not congruent with sleep providers' clinical experience, there were some silver linings in the details. First, the report[4] mentions that "all conclusions regarding the relative effect of CPAP versus no CPAP on clinically important outcomes are at best of low strength of evidence." The report continues to state that based on this uncertainty "we have limited confidence that the summary estimates… are close to the true effect."

Some of the reasons why the evidence is not congruent with patient and provider experiences of treating obstructive sleep apnea is 1) AHRQ used extremely stringent requirements invalidating high quality evidence, 2) AHRQ did not include sleepiness as an outcome measure, and 3) CPAP adherence was poor in all studies included in the AHRQ report. The requirements used in the AHRQ report were limited to randomized controlled trials, which limited the type of trials that were included in the analysis. The predominant studies that were included have limited generalizability because the SAVE,[1] RICCADSA,[5] and ISAAC[6] trials were all conducted with predominantly overweight male patients without significant sleepiness. However, when additional nonrandomized controlled trials were added, CPAP was shown to diminish cardiovascular disease and all-cause mortality. Some of the studies[1,5,7] that were included had a high percentage of study participants

with poor adherence to CPAP treatment (ISAACC trial for instance had a median 2.2 hour adherence with CPAP per night) and subanalyses showed improved outcomes with increased adherence. Sleepiness was not included as a long-term outcome since most studies investigating this symptom did not look at participants' past 6 months. In contrast, recent studies have shown that sleepiness is potentially a significant factor associated with cardiovascular risk.[7-9] In addition to the aforementioned concerns, the American Academy of Sleep Medicine in association with multiple other professional sleep organizations, including the American Academy of Dental Sleep Medicine, has criticized the report for 1) not considering motor vehicle crashes, 2) not considering blood pressure as an outcome measure, and 3) suboptimal analyses of AHI as an outcome measure.[10]

The bottom line is that the conclusions of this report will be read by policymakers who are less informed about the complex nature of both the disease process and available research on its treatment. While randomized clinical trials are currently being conducted to address the limitations of prior studies, these larger prospective trials require a significant amount of funding and time to complete. Additionally, the AHRQ report states that a mandibular advancement device (MAD) is a comparable treatment to CPAP treatment based on health outcomes. The discussion lacked any mention of how MAD treatment differs from CPAP and how it can serve as an effective alternative treatment to CPAP. Consequently, the AHRQ report, states that neither MAD nor CPAP treatments were effective in changing patient-centered outcomes. Therefore, both CPAP and MAD treatment options are considered to have the same lack of efficacy.

### Where do we go from here?

The AHRQ report raises more questions than answers. The studies on oral appliance therapy did not provide sufficient evidence to support its use as a replacement to CPAP. Therefore, without additional large prospective studies, the fate of MAD will be closely linked to the future direction of CPAP. There is a need for more studies involving CPAP and other treatment alternatives to truly determine whether or not these treatments have long-term, cost-effective health benefits. With such studies, how could the sleep field evolve?

Due to the limitations of the AHRQ report, no clear conclusions can be drawn. Additional research questions that could be investigated for MAD treatment options include: What should the required compliance rate for CPAP and MAD be? Is the apnea-hypopnea index (AHI) a good measure to segment the severity of disease burden versus hypoxic burden,[11] pulse rate response,[12] or sleepiness?[8] Will phenotyping patients allow clinicians to treat obstructive sleep apnea more effectively? What can we do as providers to find treatment options that allow the patients to be active participants in their care in order to improve adherence and positively impact health outcomes? Future studies will answer these critical questions, and there are many inquisitive researchers and clinicians already working on finding suitable answers.

The interest of CMS in pursuing CPAP effectiveness is important. Medicare is one of the largest insurance payers for CPAP machines. Will the AHRQ results influence future third-party payment of other treatment options for obstructive sleep apnea? Will the direct participation of CMS in these studies create a potential conflict of interest in interpreting the results? Due to increased oversight, the AHRQ report took longer to complete—approximately 2 years.[13]

## CONCLUSIONS

The key take away regarding the AHRQ report is that more studies are needed to elucidate the true effect of the long-term effects of CPAP. Like CPAPs, MADs treat the underlying pathophysiology of sleep apnea. Therefore, if CPAPs are not showing a cost-effective health benefit to patients as the AHRQ report concludes, then would we expect that MAD would reflect the same findings? Clinically, this is not our experience: we do see benefits from MAD and CPAP treatment. We see patients feeling less tired and unmotivated throughout the day, more able to manage hypertension and other medical comorbidities, decreasing volumes of snoring in the bedroom, and restoring relationships between bed partners. Ultimately, performing more well-designed large prospective clinical trials will not only continue to advance the sleep field, but will also answer some of these important clinical questions that will improve health outcomes. For Medicare to continue paying for the treatment of obstructive sleep apnea (i.e. MAD), further research should be done to better understand its efficacy and cost-effectiveness, and the treating dentist should be aware of the financial landscape surrounding this treatment option.

## REFERENCES


1. McEvoy RD, Antic NA, Heeley E, et al.. CPAP for prevention of cardiovascular events in obstructive sleep apnea. *N Engl J Med.*. 2016 Sep 8;375(10):919-31. doi:10.1056/NEJMoa1606599
2. Frost & Sullivan. Hidden health crisis costing America billions: Underdiagnosing and undertreating obstructive sleep apnea draining healthcare system. American Academy of Sleep Medicine. https://aasm.org/wp-content/uploads/2017/10/sleep-apnea-economic-crisis.pdf. Accessed June 19, 2023.
3. Centers for Medicare & Medicaid Services. Outcome and Payment Measures. https://www.cms.gov/medicare/quality-initiatives-patient-assessment-instruments/hospitalqualityinits/outcomeandpaymentmeasures. Updated: September 6, 2023. Accessed June 19, 2023.
4. Balk EM, Adam GP, Cao W, et al. Long-Term Health Outcomes in Obstructive Sleep Apnea: A Systematic Review of Comparative Studies Evaluating Positive Airway Pressure and Validity of Breathing Measures as Surrogate Outcomes. Project ID: SLPT0919.

(Prepared by the Brown Evidence-based Practice Center under Contract No. 290-2015-00002-I/Task Order No. 75Q80119F32017.) Rockville, MD: Agency for Healthcare Research and Quality. 2022. Available at: https://www.ahrq.gov/research/findings/ta/index.html

5. Peker Y, Glantz H, Eulenburg C, et al. Effect of Positive Airway Pressure on Cardiovascular Outcomes in Coronary Artery Disease Patients with Nonsleepy Obstructive Sleep Apnea. The RICCADSA Randomized Controlled Trial. Am J Respir Crit Care Med. 2016;194(5):613-20. doi:10.1164/rccm.201601-0088OC

6. Sánchez-de-la-Torre M, Sánchez-de-laTorre A, Bertran S, et al. Effect of obstructive sleep apnoea and its treatment with continuous positive airway pressure on the prevalence of cardiovascular events in patients with acute coronary syndrome (ISAACC study): a randomised controlled trial. Lancet Respir Med. 2020;8(4):359-67. doi: 10.1016/S2213-2600(19)30271-1

7. Barbé F, Durán-Cantolla J, Sánchez-de-la-Torre M, Martínez-Alonso M, et al. Effect of continuous positive airway pressure on the incidence of hypertension and cardiovascular events in nonsleepy patients with obstructive sleep apnea: a randomized controlled trial. *Jama*. 2012;307(20):2161-8. doi: 10.1001/jama.2012.4366.

8. Mazzotti DR, Keenan BT, Lim DC, Gottlieb DJ, Kim J, Pack AI. Symptom subtypes of obstructive sleep apnea predict incidence of cardiovascular outcomes. *Am J Respir Crit Care Med*. 2019;200(4):493-506. doi: 10.1164/rccm.201808-1509OC

9. Wang L, Liu Q, Heizhati M, Yao X, Luo Q, Li N. Association between excessive daytime sleepiness and risk of cardiovascular disease and all-cause mortality: a systematic review and meta-analysis of longitudinal cohort studies. *J Am Med Dir Assoc*. 2020;21(12):1979-85. doi: 10.1016/j.jamda.2020.05.023

10. Patil S, Gay P, Johnson K, Kimoff R, Pack A. "Re: Draft Technology Assessment – 'Continuous Positive Airway Pressure Treatment for Obstructive Sleep Apnea". https://aasm.org/wp-content/uploads/2021/04/ahrq-cpap-sleep-apnea-report-comment-letter.pdf. Accessed September 17, 2023.

11. Azarbarzin A, Sands SA, Stone KL, Taranto-Montemurro L, Messineo L, Terrill PI, Ancoli-Israel S, Ensrud K, Purcell S, White DP, Redline S. The hypoxic burden of sleep apnoea predicts cardiovascular disease-related mortality: the Osteoporotic Fractures in Men Study and the Sleep Heart Health Study. *Eur Heart J*. 2019;40(14):1149-1157. doi:10.1093/eurheartj/ehy624

12. Azarbarzin A, Sands SA, Younes M, et al. The sleep apnea–specific pulse-rate response predicts cardiovascular morbidity and mortality. *Am J Respir Crit Care Med*. 2021;203(12):1546-55. doi:10.1164/rccm.202010-3900OC

13. D'Ambrosio C, Collop N, Patil S, Shah Neomi. "Time to Rethink CPAP Therapy: A Review of the AHRQ Report and Future Directions." SLEEP 2023. Indianapolis, IN. June 7, 2023. https://www.sleepmeeting.org/class/d-12/

## SUBMISSION & CORRESPONDENCE INFORMATION

**Submitted June 28, 2023**
**Submitted in final revised form September 18, 2023**
**Accepted for publication December 19, 2023**

Address correspondence to: Aaron Glick; Email: aaron.r.glick@uth.tmc.edu

## DISCLOSURE STATEMENT

A. Glick reports being an employee and shareholder of Ember Sleep. J. Glick reports no conflicts of interest.